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Threatened preterm labour: women's experiences of risk and care management: a qualitative study

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Conflict of Interest

JC, RT and AS have no conflicts of interests to disclose. JS is an associate editor of the journal.

Ethical Approval

This study was part of the "Threatened preterm labour: risk and care management", the PETRA study, which was approved by South London Research Ethics Committee (REC Ref. 14/LO/1988).

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ACCEPTED MANUSCRIPT

Abstract

Background

Preterm birth is a major cause of neonatal death and severe morbidity, so pregnant women experiencing symptoms of threatened preterm labour may be very anxious. The risk assessment and management that follows recognition of threatened preterm labour has the potential to either increase or decrease this anxiety. The aim of this study was to explore women's experience of threatened preterm labour, risk assessment and management in order to identify potential improvements in practice.

Design

One-to-one semi-structured interviews with 19 women who experienced assessment for threatened preterm labour took place between March 2015 and January 2017. A purposive sample approach was employed to ensure participants from different risk and demographic backgrounds were recruited at an inner city UK NHS hospital. Interviews were recorded and transcribed. Data was managed with NVivo software and analysed using the Framework Approach. A public and patient involvement panel contributed to the design, analysis and interpretation of the findings.

Findings

Data saturation was achieved after 19 interviews. 11 women were low risk and 8 were high risk for preterm birth. All high risk women had experience of being supported by a specialist preterm team. Four main themes emerged: i) coping with uncertainty; ii) dealing with conflicts; iii) aspects of care and iv) interactions with professionals. Both low and high risk women experiencing TPTL struggle to cope with the uncertainty of this unpredictable state. The healthcare management they receive can both help and hinder their ability to cope with this extremely stressful experience. High risk women were less likely to receive conflicting advice.

Key conclusions and implications for practice

Clinicians should acknowledge uncertainty, minimize conflicting information and advice, and promote continuity of care models for all women, including those attending high risk clinics and in the ward environment.

Key words

Preterm, experience, threatened preterm labour,

Introduction

Preterm birth is a major cause of neonatal death and severe morbidity (Marlow *et al.*, 2014), so the development of symptoms or problems that may indicate premature labour can cause considerable stress and anxiety. Many women experiencing symptoms of threatened preterm labour (TPTL) will not subsequently deliver early, so clinical assessment and test results that can reassure as quickly as possible are likely to be beneficial. For those women whose symptoms develop into preterm labour and birth, accurate risk assessment is vital to ensure interventions, such as the administration of antenatal corticosteroids for fetal lung maturation, can be instigated quickly.

Aims

The overall aim of the PETRA study was to provide data that would lead to improvements in the management and experience of women with symptoms of TPTL. In the first part, a prospective cohort study, data was collected for the development of a risk assessment tool for calculating individual likelihood of preterm birth. The tool combines background risk factors, gestation and test results (fetal fibronectin and cervical length) and calculates a simple percentage risk of delivery within certain clinically important time points (Watson *et al.*, 2017). Knowledge of this individualised risk may enhance clinical decision making and increase confidence that management is offered to those most at risk while reducing unnecessary intervention and providing reassurance to those who are not. We also aimed to explore the experience and views of women with TPTL symptoms and the factors that could both positively and negatively affect that experience. This paper presents findings from this second, qualitative, part of the PETRA study.

Literature review

Literature on women's experience of preterm labour or being at risk of preterm birth is limited with most published studies being qualitative in nature with few participants. A picture emerges, however, of a challenging experience where women with symptoms of preterm labour try to cope with anxiety and uncertainty. They are called upon to make decisions on when to seek help, dealing with fears for the health of the baby, and often

having to cope with a loss of control as they try to balance other responsibilities such those to other children or work commitments (Barlow *et al.*, 2007; Coster-Shulz and Mackey, 1998; Mackey and Coster-Shulz, 1992; Palmer and Carty, 2006; Patterson *et al.*, 1992 Weiss *et al.*, 2001). The experience of hospitalisation or home bedrest for preterm labour has been described by a number of authors (Adler and Zarchin, 2002; Hoglund and Dykes, 2013; Lowenkron, 1999; Mackinnon, 2006) where similar themes describe women's anxiety, loss of control and conflicting responsibilities.

There is a greater paucity of evidence around women's experience and views on specific tests used as part of TPTL assessment or common interventions. Only one study was found that explored the experiences of women who had had fetal fibronectin testing as part of their assessment for TPTL symptoms (Peterson *et al.*, 2014). The authors concluded that this test is acceptable to women but also described how participants felt increased anxiety as they waited for the results. Vis *et al.* (2011) undertook a systematic review of papers assessing the additional effects (such as reassurance) of cervical length measurement in threatened preterm labour but did not find a single study that had measured the psychosocial effects. One study described women's experiences of *in utero* transfer (IUT) and how, despite little knowledge of IUT and feelings of unpreparedness, most women were resigned to the intervention (Porcellato *et al.*, 2015). No studies were found on women's experience of antenatal corticosteroid use, one of the most common interventions for women with TPTL symptoms (Roberts *et al.*, 2017).

Methods

This study was part of the "Threatened preterm labour: risk and care management", the PETRA study, which was approved by South London Research Ethics Committee (REC Ref. 14/LO/1988).

Participant selection and recruitment

A number of participants who agreed to take part in the prospective cohort study were invited to participate in the qualitative component. In an effort to capture the experience of a wide variety of women, a purposive sample strategy was used (Ritchie *et al.*, 2013).

Willing participants were given written information to consider before an interview was arranged. The information provided included reassurance that additional support would be available should the participant find talking about their experience upsetting. Written consent was obtained before commencement of the interview.

Setting

Participants received care at a large inner city teaching hospital which provides a specialist service for women at risk of preterm birth. The team offers clinical care through their preterm surveillance clinic and provides information and advice for both women and clinicians, locally and nationally.

Data collection

Data was collected through semi-structured, one-to-one interviews which were carried out between March 2015 and January 2017. Following informed consent, participants were asked to talk about their experience and views on their care and any interventions they may have received. The interview schedule was designed following literature review, consultation with clinical colleagues and in collaboration with the local preterm birth studies public and patient involvement (PPI) panel. Interviews took place in a private room in the hospital or at home, at a time convenient to the participant as soon as possible after the initial assessment for TPTL. The interviews lasted approximately one hour and were recorded, with participants consent, on digital audio equipment. The interviews were then transcribed and prepared for analysis.

Data analysis

The Framework approach (Ritchie and Spencer, 1994) was used to analyse the data, which is a systematic method of qualitative data analysis designed to generate findings that can inform practice and policy. The steps used within this approach lend themselves well to the data generated in this study as the primary aim was the description and interpretation of a pre-defined sample in a specific setting (women who have experienced TPTL symptoms and their care) with the *a priori* issue of women's experience of risk assessment procedures and management. In order to increase validity, a proportion of transcripts and identification of themes was reviewed by an academic supervisor. Data was managed using NVivo Pro

(version 11) qualitative data software. The preterm birth studies PPI panel contributed to the interpretation of results.

Findings

Participants

Data saturation was achieved after 19 women had been interviewed. Eleven had no risk factors for preterm birth, while eight were high risk. Seven of the eight high risk women had experienced previous preterm birth or late miscarriage, and one had a twin pregnancy. Eleven women were admitted because of their symptoms and test results.

Themes

Four main themes were identified, two of which captured the women's experience of threatened preterm labour, "Coping with uncertainty" and "Dealing with conflicts" and two which elucidated elements of care which had an important effect on the experience, "Aspects of care" and "Interactions with the Professionals" (Figure 1).



Figure 1: Thematic overview

Theme 1: Coping with uncertainty

Threatened preterm labour is a state of uncertainty, where women experience symptoms that may, or may not be early preterm labour. Data from this study suggests that women, both worried first time mothers and women with a history of preterm birth, will initially try

to make sense of the symptoms they are experiencing, go on seek reassurance and then try to maintain a sense of control over this unpredictable state as they “try to hold it together”.

Trying to make sense of the symptoms

Many women appeared to have spent some time trying to rationalise their symptoms as something other than preterm labour, although this was less likely in women with a history of PTB. Some women worried that their symptoms had been caused by something they had done, for example, activity, sex or not resting enough, and they felt responsible.

"Maybe because I was walking a lot more than usual ... I don't know." [12_6239]

Where symptoms remained unexplained, some accepted this and were reassured, although often initially described feeling “confused”. Others were unhappy, and felt “shrugged off” by the healthcare professionals, which could diminish their trust in the doctors.

"... if there was anything that needed attention the midwife would have said 'you need to see a doctor', and because they didn't I just assumed 'well that's fine', but clearly it's not fine, not for me..."[05_4258]

Seeking reassurance

Most women were aware that symptoms may have indicated TPTL and seemed happy to approach their midwife or call for advice. The low risk primiparous women, however, usually took some time “trying to make sense of their symptoms” before doing so, while those with a history of PTB or late miscarriage accessed help more quickly. Most found the test results reduced their anxiety. This was particularly so with the high risk women who had experience of them in the preterm clinic.

"...and then she had a look at the length of the cervix. And when she saw that it was 32mm she said 'it's good, it's a good length, you won't have any problem'. I was reassured..." [13_6253]

If symptoms continued, however, reassurance was only temporary.

"... I think what is difficult is that you can only ever get a diagnosis or you know somebody explain what is happening now and then, so I can be reassured walking out of the ADU Unit and I'm kind of like 'brilliant', twelve hours later still experiencing the same symptoms and you are back to square one again." [05_4258]

Women with a history of PTB were aware this had a great influence on how they perceived their symptoms and their need for reassurance. However, lower risk women could also be very anxious. One woman with a history of early miscarriages found it very difficult to accept the reassurance she craved.

"I think I have to just learn that when somebody reassures you that you just take it... You know... don't try to create another story.... when you have had previous experiences so you are coming from quite a negative place to start with it is quite hard to see how there could actually be a positive outcome" [05_4258]

Trying to hold it together

Those that were hospitalised appeared to be attempting to "hold it together" and trying to stay calm. Many spoke about how they tried to stay positive, or to distract themselves from thinking "the worst". This could be quite difficult, particularly when other things happened on the ward.

"... I try to think positive. I try to, um, to have a look at the facts and not try to anticipate something that probably will not happen." [13_6253]

"... just try to think about what is on the other side as well and about being a parent." [05_4258]

Midwives tried to address women's anxiety, sometimes by providing more information. This was not always welcome. One woman who had been given a book on neonatal unit care could not read it as it interfered with her trying to stay positive.

"... I didn't read it... [information book]... I wanted to read it but every time I opened it I went to the bad side... because you always sort of read what could happen ... worst case scenarios ... so I just sort of left it." [08_4770]

Some women dealt with their anxiety by getting through from one day to the next, or one week to the next.

"... I was just sort of counting the days until I reached twenty six weeks, counting the days until I reached twenty seven weeks, and then, you know, sort of counting, and counting and counting." [08_4770]

Some women found comfort in prayer and sometimes resolved that, providing everything had been done that could have been done, they were prepared to accept what happened.

"...as far as I am concerned everything that could be done has been done...the medicine that the doctors have blessed me with have done all that they could already, so then they have kind of like left it up to [God] now, for him to decide what happens." [03_4410]

Theme 2: Dealing with conflicts

Women experiencing TPTL have to deal with a number of conflicts. The unsettling experience of TPTL, its risk assessment and management can be exacerbated by conflicting information and advice, which may have come about from clinician uncertainty. Hospitalised women may have to deal with balancing the conflicting responsibilities of being in hospital to protect their unborn baby and the need to care for other children at home. All this uncertainty and conflict can result in an emotional rollercoaster of conflicting feelings.

Conflicting advice

As preterm labour is very difficult to diagnose in its early stages, it is unsurprising that women can hear many differing opinions as to what may be causing the symptoms. This was clearly an issue for several women in this study:

"...different answers from different people. I was told it was ligament pain, I was told it was fibroids, I was told it was a UTI, you know, all in the space of five days."
[07_4789].

Conflicting responsibilities

Although some had worries about paid work, anxiety caused by separation from other children appeared the most significant issue for women admitted to the antenatal ward. They felt they were being pulled emotionally between their need to care for them and protecting their unborn baby.

"...the last time she came she said quietly ...'look, mummy, they are not looking, let's leave now'". [01_4020].

Women described how they felt the need to protect current children from the potential pain of loss, but also wanted to be positive, both for themselves and their children, some of whom had borne witness to the grief and loss of earlier pregnancies.

"...we want her to be positive and want to talk to her about it but we don't know how much to say because we don't want her to be really upset if it all goes wrong again."
[01_4020]

Conflicting emotions

Women felt very anxious but tried hard to be positive and stay calm. They could feel reassured for a time, but then would experience a rising anxiety again, as the reassurance subsides if the pain continued, or fears that the baby could come early continued to haunt them.

"... it is almost like I look forward to Monday as I know Monday is the start of a new week in the pregnancy, and then usually anxiety starts to rise probably about, yeah,

Wednesday, you know, Thursday towards the end of that week, and then if I have completed the week and nothing has happened I kind of have a sort of mini celebration almost myself and think 'great, that's another week, brilliant'."

[05_4258]

Theme 3: Aspects of care

What happens when a woman with symptoms of TPTL seeks maternity care can affect her experience, both positively and negatively.

Organisation of care

Overall, the women in this study appeared to be knowledgeable about how and when to contact a midwife for advice, and found it reassuring that they were able to do so at any time.

"... I feel so much more confident now that, were something to me panic me again, I know that I can contact the midwives and they're there, and they really don't mind."

[06_4658]

Several women spoke about the importance of continuity of carer, and how this could enhance relationships and trust, as well as making care potentially more efficient and safer.

"... I think it is because when you have a midwife you build up a rapport and a relationship so you are much more likely and willing to have discussions, whereas if you are seeing different people all the time ..." *[05_4258]*

Women were grateful when midwives reorganised the bays and moved women admitted for induction of labour to a different room from those with TPTL.

"And we have two others that are just crying because they want to get their babies out. I am crying and thinking please god we don't have the same problems - I am trying to keep it in, they are trying to get it out." *[03_4410]*

Waiting and delays were an important aspect of care that affected women's experience. Many had to wait a long time for assessment in the day unit, although most were prepared for this. Waiting for interventions to be administered once they had been prescribed, however, was a different matter. One woman had to be convinced of the importance of steroids but was made very anxious by a long delay in administration. Another had a long wait for ambulance for *in utero* transfer after being told it was vital the baby was born in a hospital with adequate neonatal care.

"... they said 'oh, the ambulance will come soon'...and you keep on asking and they say 'well, it's on its way'... You've been told it's extremely urgent ... and there is a six hour wait." [08_4770].

The issue of hospital discharge could produce strong and mixed feelings. Although they wanted to go home, particularly those with children, women generally felt they were in the right place, and sometimes wanted to stay in longer than the doctors thought necessary.

"... and then I thought 'ok, I will go home on the Monday', and they told me Wednesday... and my heart sunk... and I went through it all over again..... And actually when it was time to go I wanted to cry." [18_6174]

Delays in discharge could be problematic. Women were aware this not only increased anxiety for them, but also that they were "blocking" the bed. This was often caused by delays in the preparation of discharge medications. One woman spoke of a "deal" she made with her midwife:

"...a midwife said to me... 'do you know what, generally we don't do this...she said 'I will do your tonight one for you [anticoagulant injection] if you promise to come back tomorrow...'" [18_6174].

Clinical procedures

The clinical assessment procedures women spoke about included cardiotocograph (CTG) monitoring, speculum examination, fetal fibronectin (fFN) testing and transvaginal

ultrasound assessment of cervical length. They found CTG monitoring reassuring both because it reassured them of the baby's wellbeing, but also for some, because it "proved" they were having contractions.

"... she put me on the monitor and, you know, it was quite reassuring. I could see that the heartbeat and everything was fine. I could see that I was having contractions" [06_4658]

Although speculum examinations were often noted as unpleasant, women were prepared to tolerate them and found it very reassuring when they were told their cervix was closed.

"As soon as the doctor had said my cervix was closed I felt really reassured because I felt that maybe I was worried the sharp pain that I was getting was perhaps the beginning of my cervix opening. ... I didn't know what was causing that pain."
[06_4658]

Women were reassured by low fFN results, and appreciated the fact the results came quickly. However, they were often shocked and, unsurprisingly, worried by high results. Some felt that the way results had been presented could have been better.

"When I saw that amount... because she said before [low risk] was 50, I saw 200 and I started to cry because I was like 'oh my god, it's not 51 or 52 it's like 200'"
[04_4492]

The women who had cervical length scans found them acceptable and valued the extra information. They felt it was more reassuring to actually see the cervix themselves and they appreciated the opportunity to see their baby.

"... [I had] the transvaginal scan which was another good thing because ...the cervix was a good size, so it meant that we weren't just relying on I suppose the midwife looking at my cervix and saying 'oh yes, it's good'..."[04_4492]

Women also spoke about interventions intended to reduce the risks associated with preterm birth, which included hospital admission for observation and bed rest, steroid administration for fetal lung maturation and *in utero* transfer.

Those admitted to hospital generally felt they were in the right place and felt they might not be able to rest properly at home. For those who had steroids, there was unanimous agreement it was very painful. All understood the reasons and accepted the intervention, and most said they preferred to be warned so they could prepare themselves.

"I remember the first jab and I said to my husband 'that was worse than these pelvic contractions'. It's stingy and you don't get anything nice at the end of it. With labour you've got a baby'." [14_6317].

Relationships with other patients

Being with, and relating to other patients on the ward could both help and hinder women's ability to cope. Developing relationships could be helpful and result in a sense of shared experience, and also help them to put their own worries into perspective.

"...you become sort of kindred spirits in that, and there is something supportive and bonding about it... I think there's something grounding about being with other people who have ... circumstances that are more fortuitous than yours and some that aren't." [11_6237]

However, being witness to emergencies on the ward could be extremely alarming, particularly when it happened to women they had developed relationships with, and especially if they were also in danger of preterm birth.

"... this morning I woke up very early cos the emergency bell went off... .. I know when I see baby doctors they have a blue bag, a very big bag... straight away in my mind I said 'oh my god, please just save the baby'... it was so frightening and I just started crying in the toilet." [15_5991]

"...in hospital you are just wondering when you hear someone's buzzer go off you don't know if you are the one next." [15_5991]

Theme 4: Interactions with professionals

Interactions with health professionals appeared to have a significant effect on participants' experience.

Attitudes of clinicians

It is reassuring that most of the women in this study felt the staff were very caring and supportive and this had a positive effect on their experience.

"The midwives ... are always smiling, always friendly, introduce themselves, asking do you need anything, just offering that care and that help. I think it makes a huge difference in a situation like this..." [10_5864].

Communication with clinicians

Communication was, on the whole, good. Most women appeared to be comfortable in asking for further explanation if they did not understand, and this was provided on most occasions. The women who had quick access to specialist advice and continuity of carer seemed most likely to have confidence in the health professionals.

"Sometimes I can't express myself properly. They could see that we come from other country, but they explained everything.... If I didn't understand something I could ask it and they explained it another way." [02_4355].

Confidence and trust in clinicians

Overall, most women seemed to trust the health professionals caring for them and were prepared to take their advice. However, when the clinician appeared uncertain this confidence was undermined.

"...sometimes they said there's nothing but I'm getting these pains but they don't know why. They said 'it could just be your stomach getting bigger' but I don't really think they are that sure themselves." [09_5222Q]

One woman was not happy to immediately accept the advice to have steroids and, as she was not convinced the doctor advising her knew enough about it, first wanted to speak to her aunt who was a paediatrician.

"I spoke to my aunt and she said straight away, oh no, there is no doubt, take the steroids. There is absolutely no question. And once she said that I said 'ok', because although she didn't give me a lot of scientific explanation she is someone I trust very much." [04_4492].

In summary, participants spoke about unsettling feelings of uncertainty and conflict associated with TPTL and how these affected their ability to cope. They also talked, largely positively, about the care they received and interactions with the professionals providing that care.

Discussion

Uncertainty and conflict in threatened preterm labour

The very nature of threatened preterm labour is one of uncertainty. Preterm labour is very difficult to diagnose in its early stages, so it is not surprising that women in our study experienced a great deal of uncertainty and, at times, conflicting opinions as to what may be causing their symptoms. Most of the time TPTL symptoms are transient and resolve on their own, but clinicians must consider the possibility of labour, whilst not ruling out other, sometimes potentially serious, causes for the symptoms that may be unrelated to the pregnancy.

Women too are uncertain as to the causes of their symptoms and participants in this study were no exception. They appeared to undergo a process which included trying to make sense of their symptoms before seeking reassurance or medical help, and this echoed

findings reported in other studies (Barlow *et al.* 2007; Coster-Shultz and Mackey, 1998; Patterson *et al.*, 1992; Weiss *et al.*, 2001). The process appeared to be prolonged in primiparous women in our study, however, and women with previous experience of preterm birth were quicker to seek help and less concerned about being seen as over-reacting, which is also reported by the high risk women in O'Brien *et al.*'s study (2010).

The uncertainty of clinicians around TPTL can lead to conflicting advice and information, which in turn increases anxiety and this was reported by several study participants. Conflicting advice and information appeared to be an important theme in our study and although mentioned by Barlow *et al.*, (2007) does not feature prominently in many related studies. Although evidence on how best to deal with uncertainty in clinical practice remains unclear (David and Akintomide, 2016; Politi *et al.*, 2007) failing to acknowledging it can cause further problems (Politi, 2015). Clinicians may give the impression of confidence in a diagnosis to a woman whose symptoms persist and who may soon afterwards hear a different opinion.

Interestingly, the high risk women in our study tended to get less conflicting advice than the low risk mothers. This was possibly because the hospital where this study took place has a dedicated specialist preterm team. The hospital staff have confidence in this well-established team and therefore the likelihood that advice and information being inconsistent is lower. It is also possible that clinicians may be more inclined to recommend interventions at lower thresholds for high risk women.

The emotional stress of conflicting responsibilities, the need to care for other children as well as their unborn baby, was apparent in the women in our study, and has been reported previously. Those who remained under threat of preterm birth appeared to be trying to "hold it together" and employed a range of coping mechanisms as they dealt with the sometimes intense anxiety and the recommended, albeit temporary, life changes such as hospitalisation or restriction of activity. This also resonates with findings from earlier studies (Adler *et al.*, 2002; Hoglund and Dykes, 2013; Mackinnon, 2006).

Anxiety in threatened preterm labour

The uncertainty and conflict associated with TPTL results in anxiety and stress that is not just unpleasant, but may even increase the risk of preterm birth. A large body of literature suggests an association between stress and preterm birth (Christian, 2012; Latendresse, 2009; Rich-Edwards and Grizzard, 2005; Ruiz *et al.*, 2003; Wadhwa *et al.*, 2001) and plausible aetiologies, such as the interaction between stress hormones and the inflammatory response, have been suggested. Lobel *et al.* (2008) found that pregnancy-specific stress, i.e. stress resulting from factors relating directly to their pregnancy, which includes concerns about the baby's health, may be an even more important contributor to adverse birth outcomes than general stress. It would be sensible, then, to seek to address the modifiable causes of anxiety in women at risk of preterm birth, including those with symptoms of TPTL. Simple interventions, such as using reliable predictive tests (e.g. fFN and CL measurement), could reduce uncertainty, at least in those women with reassuring results, who make up the majority of women with TPTL symptoms.

Interventions designed to directly address stress and anxiety in women at risk of preterm birth have been investigated. Jallo *et al.* (2017) examined the use of a mobile app which provided women with information and guided imagery and compared stress levels (Perceived Stress Scale (PSS), Visual Analog Stress Scale (VASS) scores, Coping Self-efficacy (CSES)) in 15 women hospitalised for TPTL. They found a significant difference ($p < 0.0001$) in VASS scores, but not PSS or CSES, which suggests that immediate stress, at least, was relieved by the intervention. In another study (Chuang *et al.*, 2012) researchers found that a relaxation training programme improved the immediate psychological and physiological stress responses in women with TPTL. They also found that, although numbers were too small to prove effect on outcomes ($n=129$), fewer women in the experimental group gave birth within one week of study entry (16% vs 30%), and within two weeks of study entry (7% vs 19%).

Another intervention, an internet-based cognitive behavioural self-management training programme (IB-CBSM), was tested in 93 women with TPTL (Scherer *et al.*, 2016). The researchers found the control group, who had been given alternative exercises, such as

Sudoku, riddles and writing stories, experienced the same reduction in stress and anxiety as the intervention group. This suggests that distraction itself could be useful, and several women in our study appeared to be using distraction as coping mechanism. Other studies have found distraction to have beneficial effects on stress in both preterm labour (van Zuuren, 1998) and other stressful conditions (Priem and Solomon, 2009; Ram *et al.*, 2010).

Women who were trying to stay positive and using distraction in coping with their anxiety did not always feel the staff understood when they declined offers of information and books about what might happen if the baby was born early and needed neonatal admission. This finding echoes those of Gaucher and colleagues (2016) who surveyed women about their experience of neonatal specialist consultation when they had been hospitalised for TPTL. Of the 229 women who responded, 90% indicated they had had a positive experience, although 39% felt they had received too much information.

Aspects of care and interactions with professionals

The organisation of maternity care and interactions with healthcare professionals can have a profound effect on women's experience of TPTL. Several women in our study spoke about the importance of continuity of carer, and how this could enhance relationships and trust, as well as potentially making care more efficient and safer. Knowing who, and how, to call, and feeling comfortable doing so, makes speedy access to information and reassurance, another important issue for women in this study, easier. Continuity of care models have been shown to be safe and effective in reducing interventions, preterm birth and fetal loss (Sandall *et al.*, 2016) although the actual mechanisms involved remain unclear. The women in our study who had quick access to specialist advice and continuity of carer appeared to be most likely to have confidence in the health professionals.

All of the women in our study who were considered to be particularly at risk of preterm birth, either because of their obstetric history or the severity of their symptoms, were known to the specialist preterm team. They appeared to trust members of this team, who were less likely to display uncertainty, and they spoke less of receiving conflicting advice. Specialist preterm clinics and teams that can quickly identify risk and instigate timely

interventions are not currently established in all maternity services. Numbers are increasing, however, and they have been identified as a useful mechanism in achieving the UK government's target to reduce the preterm birth rate from 8 to 6% by 2025 (Department of Health, 2017).

Evidence on the effectiveness of specialist preterm services is, however, limited. A systematic review of the effectiveness of specialist preterm clinics in reducing preterm birth and its consequences found mixed results (Malouf *et al.*, 2017). Findings from randomised controlled trials, all of which were carried out before 1990, showed no benefit, however later cohort studies reported a reduction in preterm birth. As cohort studies are regarded as low quality evidence the authors recommend caution when interpreting the results, but acknowledge that the lack of recent RCT evidence is likely to continue due to the difficulties of conducting randomised trials which deny women a valued service. The women attending a specialist preterm clinic in O'Brien *et al.*'s (2010) qualitative study appreciated the regular reassurance and support they obtained at these clinics and reported feeling that other health professionals did not always understand their particular worries. The high risk women in our study expressed similar views. Women known to the specialist preterm team often spoke of how they felt comfortable accessing the team for the reassurance they frequently required.

Fernandez Turienzo *et al.* (2016), in their systematic review and meta-analysis of models of antenatal care designed to reduce and prevent preterm birth, found that while "alternative" models of care (i.e. midwife-led continuity of care and specialised care) reduce preterm birth compared to standard care, conclusions on the relative benefits of the two models could not be drawn. Our findings suggest that these two models share at least two elements: 1. quick and easy access to advice from a known and trusted clinician and 2. continuity of carers who know the woman and how best to support her in her coping mechanisms, whether that be providing more information, helping her to be positive and giving, in most cases, speedy reassurance. As anxiety is highly associated with preterm birth risk, perhaps one of the most important factors is the reduction of anxiety that comes with quick access and continuity of carer.

Implications for policy, practice and further research

Our study findings suggest that continuity of carer is a significant issue for women at risk of preterm birth and the importance of continuity in preterm birth reduction has been proven, and acknowledged by the UK Department of Health (2017). Since publication of “Changing Childbirth” in 1993, continuity of carer has been virtually enshrined in UK maternity policy (Department of Health, 2004; Department of Health, 2007; Expert Maternity Group, 1993; NHS England, 2016), yet this model of care remains unavailable to most women (Redshaw and Henderson, 2015). There is new impetus, however, since the Better Births Maternity Review Report and the NHS England’s Maternity Transformation Programme which is working towards implementing the recommendations (NHS England, 2016).

The establishment of national guidance on referral to specialist preterm services could lead to a reduction in conflicting advice and information for women at risk, as well as the targeting of interventions that reduce preterm birth and the risks associated with it. Additionally, utilizing reliable tests such as fetal fibronectin and/or cervical length measurement, which have high negative predictive values, could reduce anxiety and the number of unnecessary interventions, at least in women where risk of delivery is low. Reducing unnecessary hospitalisation, treatments and the *in utero* transfers which result in women being sometimes long distances from their families would undoubtedly reduce concomitant anxiety.

Increased awareness of the issues important to women with symptoms of TPTL will help to improve their experience and potentially, pregnancy outcomes. Where risk remains high and reassurance cannot be given, clinicians must take care to acknowledge uncertainty, minimize delays and conflicting advice and take time to assess the woman’s individual coping strategies. Providing detailed information may be important for some, but this is not necessarily the case for women who are coping by distracting themselves and trying to stay positive.

Further research into the relationship between anxiety and preterm birth and anxiety reducing interventions is needed. This is a promising area and more needs to be done to

explore how stress management interventions can be utilised to help women at risk of preterm birth. Research into continuity models for high risk women would also be useful. One such project is ongoing. The POPPIE study (ISRCTN trial registry number ISRCTN37733900) is an RCT investigating potential improvements in experience and outcomes of women at risk of preterm birth between women allocated to either specialist preterm midwifery team care or standard care.

As growth in the number of specialist preterm clinics continues, a project utilizing the UK Preterm Clinical Network Database (www.medscinet.net/ukpcn) is planned that that will provide insights into current practice, pregnancy outcomes, the experience of women using these services and data for retrospective cohort analysis.

Limitations

This was a small qualitative study and the experience and views of women who agreed to participate may not be representative of the population. Interpretation of the findings will have been influenced by the researcher's experience, as a women, a mother, a midwife, and a midwife with a long experience of caring for women at risk of preterm birth. Participants were recruited from one inner-city teaching hospital with a specialist preterm surveillance clinic which is directed by an internationally renowned expert in preterm birth. Care of women with symptoms of TPTL may not be representative of care in other hospitals, many of which do not currently offer these specialist services, and local guidelines and policies may differ from those elsewhere. Clinicians working in this hospital may also have greater confidence in the tests used, i.e. fetal fibronectin, because much of the research validating its use in the UK was carried out at this hospital. The participants already known to be high risk and under the care of the specialist preterm team may have been influenced by their experience when they presented with symptoms.

Conclusion

This is the first study exploring women's experience of TPTL in a UK hospital with a specialist preterm service. The findings provide insights into the experience of both low and high risk women with symptoms of threatened preterm labour and further support the need for

women of all risk groups to have speedy access to advice and information, and continuity of care.

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References

- Adler, C.L. & Zarchin, Y.R. 2002, "The "Virtual Focus Group": Using the Internet to Reach Pregnant Women on Home Bed Rest", *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, vol. 31, no. 4, pp. 418-427.
- Barlow, J.H., Hainsworth, J.M. & Thornton, S. 2007, "An exploratory, descriptive study of women's experiences of hospital admission during pre-term labor", *Acta Obstetrica et Gynecologica Scandinavica*, vol. 86, no. 4, pp. 429-434.
- Christian, L.M. 2012, "Psychoneuroimmunology in pregnancy: Immune pathways linking stress with maternal health, adverse birth outcomes, and fetal development", *Neuroscience & Biobehavioral Reviews*, vol. 36, no. 1, pp. 350-361.
- Chuang L.L., Lin L.C., Cheng P.J., Chen C.H., Wu S.C. & Chang, C.L. 2012, "Effects of a relaxation training programme on immediate and prolonged stress responses in women with preterm labour.", *Journal of advanced nursing*, vol. 68, no. 1, pp. 170-180.
- Coster-Schulz, M.A. & Mackey, M.C. 1998, "The preterm labor experience: A balancing act", *Clinical nursing research*, vol. 7, no. 4, pp. 335-359.
- David, A.L. & Akintomide, H. 2016, "Presenting risk information in sexual and reproductive health care", *The journal of family planning and reproductive health care*, vol. 42, no. 3, pp. 213-219.
- Department of Health 2004, "National service framework for children, young people and maternity services", London.
- Department of Health 2007, "Maternity Matters: Choice, access and continuity of care in a safe service", *Department of Health/Partnerships for Children, Families and Maternity*, London.
- Department of Health 2017 "Safer Maternity Care The National Maternity Safety Strategy - Progress and Next Steps" available at:
<https://www.gov.uk/government/publications/safer-maternity-care-progress-and-next-steps> accessed 09/01/2018
- NHS England. 2016, "National Maternity Review. Better Births; Improving Outcomes of Maternity Services in England", NHS England, London
- Expert Maternity Group & Cumberlege, B.J. 1993, *Changing Childbirth: Report of the Expert Maternity Group*, HM Stationery Office.
- Fernandez Turienzo, C., Sandall, J. & Peacock, J.L. 2016, "Models of antenatal care to reduce and prevent preterm birth: a systematic review and meta-analysis", *BMJ Open*, vol. 6, no. 1.

- Gaucher, N., Nadeau, S., Barbier, A., Janvier, A. & Payot, A. 2016, "Personalized Antenatal Consultations for Preterm Labor: Responding to Mothers' Expectations", *Journal of Pediatrics*, vol. 178, pp. 130-134.e7.
- Höglund, E. & Dykes, A.-. 2013, "Living with uncertainty: A Swedish qualitative interview study of women at home on sick leave due to premature labour", *Midwifery*, vol. 29, no. 5, pp. 468-473.
- Jallo N. Thacker LR. Menzies V. 2017, "A Stress Coping App for Hospitalized Pregnant Women at Risk for Preterm Birth." *MCN - American Journal of Maternal Child Nursing*, vol. 42, no. 5, pp. 257-262.
- Latendresse, G. 2009, "The Interaction Between Chronic Stress and Pregnancy: Preterm Birth from A Biobehavioral Perspective.", *Journal of Midwifery and Women's Health*, vol. 54, no. 1, pp. 8-17.
- Lobel, M., Cannella, D. L., Graham, J. E., DeVincent, C., Schneider, J., & Meyer, B. A. "Pregnancy-specific stress, prenatal health behaviors, and birth outcomes", *Health Psychology*, vol. 27, no. 5, pp. 604-615.
- Lowenkron, A.H. 1999, "Coping with the Stress of Premature Labor", *Health care for women international*, vol. 20, no. 6, pp. 547-561.
- Mackey, M.C. & Coster-Schulz, M.A. 1992, "Women's views of the preterm labor experience.", *Clinical nursing research*, vol. 1, no. 4, pp. 366-384.
- MacKinnon, K. 2006, "Living with the threat of preterm labor: Women's work of keeping the baby in", *JOGNN - Journal of Obstetric, Gynecologic, and Neonatal Nursing*, vol. 35, no. 6, pp. 700-708.
- Malouf, R. & Redshaw, M. 2017, "Specialist antenatal clinics for women at high risk of preterm birth: A systematic review of qualitative and quantitative research", *BMC Pregnancy and Childbirth*, vol. 17, no. 1.
- Marlow, N., Bennett, C., Draper, E.S., Hennessy, E.M., Morgan, A.S. & Costeloe, K.L. 2014, "Perinatal outcomes for extremely preterm babies in relation to place of birth in England: the EPICure 2 study." *Archives of disease in childhood.Fetal and neonatal edition*, vol.99, no.3, pp F181-8.
- O'Brien, E.T., Quenby, S. & Lavender, T. 2010, "Women's views of high risk pregnancy under threat of preterm birth", *Sexual and Reproductive Healthcare*, vol. 1, no. 3, pp. 79-84.
- Palmer, L. & Carty, E. 2006, "Deciding When It's Labor: The Experience of Women Who Have Received Antepartum Care at Home for Preterm Labor", *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, vol. 35, no. 4, pp. 509-515.

- PATTERSON, E.T., DOUGLAS, A.B., Patterson, P.M. & Bradle, J.B. 1992, "Symptoms of preterm labor and self-diagnostic confusion.", *Nursing research*, vol. 41, no. 6, pp. 367-373.
- Patterson, E.T., Douglas, A.B., Patterson, P.M. & Bradle, J.B. 1992, "Symptoms of Preterm Labor And Self-Diagnostic Confusion", *Nursing research*, vol. 41, no. 6, pp. 367-373.
- Peterson, W.E., Sprague, A.E., Reszel, J., Walker, M., Fell, D.B., Perkins, S.L., Dunn, S.I. & Johnson, M. 2014, "Women's perspectives of the fetal fibronectin testing process: A qualitative descriptive study", *BMC Pregnancy and Childbirth*, vol. 14, no. 1.
- Politi, M.C., Han, P.K. & Col, N.F. 2007, "Communicating the uncertainty of harms and benefits of medical interventions", *Medical decision making : an international journal of the Society for Medical Decision Making*, vol. 27, no. 5, pp. 681-695.
- Politi, M. 2015, "Stories of medical decision making: Helping patients and clinicians manage uncertainty during clinical care", *Medical Decision Making*.
- Porcellato, L., Masson, G., O'Mahony, F., Jenkinson, S., Vanner, T., Cheshire, K. & Perkins, E. 2015, "'It's something you have to put up with'—service users' experiences of in utero transfer: a qualitative study", *BJOG: An International Journal of Obstetrics & Gynaecology*,
- Priem, J.S. & Solomon, D.H. 2009, "Comforting apprehensive communicators: The effects of reappraisal and distraction on cortisol levels among students in a public speaking class", *Communication Quarterly*, vol. 57, no. 3, pp. 259-281.
- Ram, D., Shapira, J., Holan, G., Magora, F., Cohen, S. & Davidovich, E. 2010, "Audiovisual video eyeglass distraction during dental treatment in children", *Quintessence international*, , pp. 673.
- Redshaw, M. & Henderson, J. 2015, "Safely delivered: a national survey of women's experience of maternity care 2014"
- Rich-Edwards, J.W. & Grizzard, T.A. 2005, "Psychosocial stress and neuroendocrine mechanisms in preterm delivery", *American Journal of Obstetrics and Gynecology*, vol. 192, no. 5, pp. S30-S35.
- Ritchie, J., Lewis, J., Nicholls, C.M. and Ormston, R. eds., 2013. *Qualitative research practice: A guide for social science students and researchers*. Sage.
- Roberts D, Brown J, Medley N, Dalziel SR. 2017 Antenatal corticosteroids for accelerating fetal lung maturation for women at risk of preterm birth. *Cochrane Database of Systematic Reviews*, Issue 3. Art. No.: CD004454. DOI: 10.1002/14651858.CD004454.pub3.

- Ruiz, R.J., Fullerton, J. & Dudley, D.J. 2003, "The interrelationship of maternal stress, endocrine factors and inflammation on gestational length", *Obstetrical & gynecological survey*, vol. 58, no. 6, pp. 415-428.
- Scherer S. Alder J. Gaab J. 2016, "Patient satisfaction and psychological well-being after internet-based cognitive behavioral stress management (IB-CBSM) for women with preterm labor: a randomized controlled trial.", *Journal of psychosomatic research*.
- Sandall, J., Soltani, H., Gates, S., Shennan, A. & Devane, D. 2016, "Midwife-led continuity models versus other models of care for childbearing women", *Cochrane Database of Systematic Reviews*, vol. 2016, no. 4.
- van Zuuren, F.J. 1998, "The effects of information, distraction and coping style on symptom reporting during preterm labor", *Psychology and Health*, vol. 13, no. 1, pp. 49-54.
- Vis, J.Y., Kuin, R.A., Grobman, W.A., Mol, B.W., Bossuyt, P.M. & Opmeer, B.C. 2011, "Additional effects of the cervical length measurement in women with preterm contractions: a systematic review", *Archives of Gynecology & Obstetrics*, vol. 284, no. 3, pp. 521-526.
- Watson, H.A., Carter, J., Seed, P.T., Tribe, R.M. & Shennan, A.H. 2017, "The QUIPP app: a safe alternative to a treat-all strategy for threatened preterm labour", *Ultrasound in Obstetrics & Gynecology*, vol. 50 no.3, pp.342-346.
- Wadhwa, P.D., Culhane, J.F., Rauh, V., Barve, S.S., Hogan, V., Sandman, C.A., Hobel, C.J., Chicz-DeMet, A., Dunkel-Schetter, C. & Garite, T.J. 2001, "Stress, infection and preterm birth: a biobehavioural perspective", *Paediatric and perinatal epidemiology*, vol. 15, no. s2, pp. 17-29.
- Weiss, M.E., Saks, N.P. & Harris, S. 2002, "Resolving the uncertainty of preterm symptoms: Women's experiences with the onset of preterm labor", *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, vol. 31, no. 1, pp. 66-76.